DOCUMENT RESUME

ED 285 322 EC 200 259

TITLE	Seizure Recognition and Observation: A Guide for Allied Health Professionals.
INSTITUTION	Epilepsy Foundation of America, Landover, MD.
REPORT NO	033-383-SRO
PUB DATE	81
NOTE	16p.; A grant was provided from Parke-Davis, Division of Warner-Lambert Company.
PUB TYPE	Guides - Non-Classroom Use (055)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	Allied Health Personnel; *Classification; *Epilepsy; First Aid; Helping Relationship; *Observation; *Seizures

ABSTRACT

Intended for allied health professionals, this guide provides information on seizure recognition and classification to help them assist the patient, the family, and the treating physician in obtaining control of epileptic seizures. A section on seizure recognition describes epilepsy and seizures, covering seizure classification and the causes of epilepsy. A section on seizure observation presents information pertaining to the rationale for such observation and observation components (what happened before, during, and after the seizure). The third section presents exercises (case studies) in observation and recording of seizures. Tables list the characteristics of partial and generalized seizures, and case studies with questions are presented. Use of the anecdotal record is explained. First aid for seizures is discussed in the fourth section, covering treatment during a convulsive seizure, head injury during a seizure, and non-convulsive seizures. (CB)

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SEIZURE RECOGNITION AND OBSERVATION

A Guide for Allied Health Professionals

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EC 200259

A guide for allied health professionals regarding the application of seizure recognition and classification information in their role of assisting the patient, the family, and the treating physician to obtain the best control of seizures that is possible for the individual

Acknowledgment

This guide has been produced by the Epilepsy Foundation of America through a grant from PARKE-DAVIS, Division of Warner-Lambert Company. For further information about this guide and the utilization of these materials, please contact the National Office:

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SEIZURE RECOGNITION AND OBSERVATION

INTRODUCTION

The Epilepsy Foundation of America, with funds provided by a grant from Parke-Davis, Division of Warner-Lambert Company, developed the film and monograph *How to Recognize and Classify Seizures*. The material is designed to assist physicians in the diagnosis of epilepsy in accord with the International Classification of Epileptic Seizures.

Both the film and the monograph will also be of value to the allied health professionals. These are the people who provide assistance to physicians, to patients, and to families. For example, nurses in a variety of settings—including hospitals, clinics, schools, nursing homes, and residential settings—are key people in providing health-care services. Health education specialists, social workers, psychologists, paramedics, and staff members of developmental centers all touch the lives of people with epilepsy.

These professionals need to know the different classifications of seizures in order to effectively observe, report, and provide assistance as appropriate for the different types of seizures. The scope of the work of allied health professionals, however, is such that there is also a need for significant effort in the roles of educator, consultant, and counselor.

A primary education role may be with the patient and family. They will need accurate information about the seizures, the medication, and the importance of compliance; how to observe, record, and report seizure behavior; and what changes they may see. In addition to information, the patient and family will often rely on the health professional to provide them with support and advice on community resources.

Others who are involved with the person who has epilepsy may also turn to the health professional for education and consultation. Teachers, employers, and staff members of residential facilities, nursing homes, and recreational facilities are among those who need accurate information about the epilepsies. They may also need assistance on how to deal with a particular individual, or where to turn for additional aid.

OBJECTIVES

If allied health professionals are expected to meet the demands that are likely to be placed upon them, knowledge of seizure classification is important. *While it is the physician's responsibility to diagnose the specific seizure type, it is the responsibility of those in allied health fields to be able to*—

1. observe, accurately record, and report the seizure behavior to the physician.
2. provide appropriate first aid to the person experiencing a seizure.
3. provide appropriate and accurate information and orientation to patients, family members, and significant others, specifically in the areas of seizure observation, first aid, compliance with treatment, and in general, coping with the condition.

SEIZURE RECOGNITION

"A meaningful diagnosis and understanding of epilepsy in any patient will develop through three overlapping and simultaneously determined steps. First is the recognition that the patient has epilepsy. Second, if the patient does have epilepsy, what is the type(s) of epileptic seizures that exists? Finally, the cause of the problem must be determined." (Monograph, *How to Recognize and Classify Seizures*, page 4.)

What then is epilepsy, and what is a seizure? What are the different types of seizures it is possible to have? What are the causes of epilepsy? These are the questions we will address in this section.

What Is Epilepsy? What Is a Seizure?

Epilepsy is a disorder of the central nervous system which is characterized by a tendency of recurrent seizures. An epileptic seizure is a finite event and is composed of a limited number of clinical and EEG manifestations. Seizures are brief temporary malfunctions of the electrical systems of the brain. These malfunctions produce an excessive discharge of electrical energy between cells and are manifested by certain clinical signs. All seizures have—

1. a beginning and an end.
2. an initial event or sequence of events and a duration.
3. an alteration of consciousness (with few exceptions).
4. some type of abnormal movement and/or postural change.
5. some time needed to return to normal following the attack. (Refer to the monograph for details.)

Seizure Classification

The International Classification of Epileptic Seizures divides seizures into two major categories—partial seizures and generalized seizures.

Partial seizures are those with a focal area of electrical malfunction in the brain, and this malfunction will be accompanied by a focal neurological activity. Partial seizures may or may not be associated with impairment of

consciousness, depending on the location and subsequent involvement of other brain structure. Partial seizures include those traditionally called focal motor seizures and temporal lobe seizures. (For specific examples of clinical manifestations of partial seizures, refer to pages 7-11 of the monograph.)

Generalized seizures are characterized by malfunction of both hemispheres of the brain simultaneously and without a local onset. Included are those traditionally known as grand mal, petit mal, and minor motor seizures. Consciousness is lost, and this is the initial clinical manifestation. (For examples of clinical manifestations of the various seizures classified as generalized seizures, refer to pages 12-15 of the monograph.)

What Causes Epilepsy?

Epilepsy can begin at any age, but the majority of patients – 75 to 90 percent – have their first seizure before they reach the age of 20. Indeed, the age of the patient at the time of the first seizure is frequently related to the etiology.

In newborns and in infancy, genetic metabolic defects, developmental brain defects, perinatal injuries, and severe hypoxia are among the most common causes. Metabolic disorders such as hypoglycemia, hypocalcemia, and vitamin B_6 deficiency also cause seizures during infancy.

During childhood, seizures may be triggered by brain infections such as meningitis, encephalitis, or brain abscess; the first seizure may occur during the acute stage of the illness, or later on because of residual damage to some brain cells. Less common causes in children are tumors, toxins, vascular disease, degenerative disease, and trauma. Many children experience seizures coincident with fever (febrile convulsions) caused by infection in other parts of the body, but only a very small percentage of this group have persistent seizures with or without fever or after the age of four.

Head trauma is one of the biggest causes of seizures in young adults. The seizures may occur immediately, or not until later, after the injury, perhaps even years later. Brain tumor should also be suspected when anyone over 20 suffers a seizure for the first time – approximately 30 to 40 percent of all patients with brain tumors have seizures.

Cerebrovascular disease is the most common cause after the age of 50. Many elderly people experience seizures after a stroke or as a result of degenerative disease of the brain.

Still, in a very large proportion of epileptic seizures no definite or presumed cause can be found. Most experts do not believe that genetic predisposition is mainly responsible for most seizures. Nevertheless, genetic predisposition does play a role in some seizure types, since people with a family history of epilepsy have a higher incidence of seizures than the rest of the population. Also, EEG tracings of asymptomatic relatives of patients with some forms of epilepsy have a higher incidence of abnormal discharges than the general population. The extent to which a genetic factor is involved varies depending upon the nature of the seizure. For example, in post-traumatic epilepsy, or seizures associated with tumors, the role of genetic susceptibility is negligible.

SEIZURE OBSERVATION[1]

Rationale for Observation

As previously indicated, it is the physician's role to diagnose the epilepsy and the specific seizure type. Only rarely is the physician able to make direct observations of the patient during a seizure, yet the clinical description of seizure behavior is a major factor in confirming the diagnosis and classifying the type of epileptic seizure. Therefore, the physician must rely on those who have observed the seizure behavior to record and report the event accurately. This is the role of the allied health professional.

Not only does the accurate observation of seizure behavior assist in diagnosis and classification, it is also a major guide to initial choice of drugs. Since the anti-epileptic medications are seizure specific, it is essential to prescribe the medication(s) most likely to control a seizure type.

Observation of seizures may alert the physician to changes in the character of the seizures. Thus a person who at first exhibits a pattern of generalized seizures may be placed on proper medication to control that seizure type, and then begin to exhibit a pattern of partial seizures. Observation of this new pattern reported to the physician will enable him to adjust the medication appropriately.

Finally, the accurate observation and recording of seizures may serve to alert patients to events or circumstances that may precipitate seizures. For example, the person may be experiencing seizures at a particular time of day — perhaps just before the time to take the medication. This might indicate a need for the physician to adjust either the amount of medication or the time for medication to be taken. Or the patient who is photosensitive may be alerted to the fact that he or she has seizures when passing a line of trees while on the way to work. Appropriate precautions to reduce the flicker of sunlight through the trees may reduce the risk of seizure.

Components of Observation

Seizure observation has three major components:

1. What happened before the seizure?
2. What happened during the seizure?
3. What happened after the seizure?

What Happened Before the Seizure?

Where was the person? What time was it? What was happening at the time? Did the person recognize the onset of the seizure by a smell, a visual disturbance, a sound, or a funny sensation in the stomach? Did someone else alert you to the patient's behavior?

What Happened During the Seizure?

Observe exactly what the person is doing. Try to remember the events in chronological order. The *initial event* is often the best clue for determining the

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1. The section on Seizure Observation was adapted in part from *Epilepsy: A Comprehensive Approach for Nurses*, developed by the Comprehensive Epilepsy Program and the Continuing Education School of Nursing, University of Minnesota, 1979.

type of attack and making preliminary decisions about localization of the origin of the attack.

Time the seizure. The duration of the seizure is determined by separating the active part of the seizure from the symptoms after the seizure (the postictal state). The physician needs to know if the attacks averaged a few seconds, a minute or so, or two or three minutes or longer. Very few seizures will last more than five minutes, when the postictal stage is excluded. Since it may be difficult to time and observe the seizure simultaneously, ask another person to time while you observe.

What physical manifestations did you observe? Was the body rigid or limp? What did the eyes do? Did they roll upward? Did they go to the right or the left? Was the person sweating? flushed? pale? cyanotic? Did the person bite his or her tongue? Was the saliva clear or bloody? Was the person incontinent? Was the person alert or confused? What was the level of consciousness?

What Happened After the Seizure?

Was the person alert, drowsy, or confused? Did he or she complain of a headache, muscle tiredness, or weakness specific to one side?

EXERCISES IN OBSERVATION AND RECORDING

To assist you in developing the skills of seizure observation, the following tables of some seizure types, an example of an anecdotal record, and some case studies are designed to let you test your abilities at this point.

Table 1: Partial Seizures

Type	Duration	Seizure Symptoms	Postictal Symptoms
Simple Partial	30 seconds	Vary: — sudden jerking — sensory phenomena	No loss of consciousness
Complex Partial	1-2 minutes	May have aura Staring Automatisms, i.e., lip-smacking picking at clothes fumbling Unaware of environment May wander	Amnesia for seizure events Mild to moderate confusion

Table 2: Generalized Seizures

Type	Duration	Seizure Symptoms	Postictal Symptoms
Absence (petit mal)	2-15 seconds	Stare Eyes fluttering	Amnesia for seizure events No confusion Able to resume activity
Generalized Tonic-Clonic (grand mal)	1-2 minutes	A cry Fall Tonicity (rigidity) Clonicity (jerking) May have cyanosis	Amnesia for seizure events Confusion Deep sleep

For more detailed discussion of the information summarized in Table 1, consult the monograph, pages 7-11; for Table 2, pages 12-14.

Case Studies

Question 1

A nurse on duty at a nursing home notices that one of the residents exhibits a twitching in the left foot. This twitching then seems to progress to the left hand and then to the left side of the face. The resident does not have a loss of consciousness. Based on the Tables and the case history, answer the following true/false questions.

a. It is possible that this resident is experiencing a simple partial seizure. _____ T F

b. It is normal for the resident to remain conscious during this seizure. _____ T F

Question 2

A staff person of a developmental activity center is concerned about one of her students whose performance has declined in the last month. She says that the child is becoming increasingly inattentive and frequently daydreams, even when doing an activity she enjoys. She will stop mid-sentence, pause, then continue as though nothing has occurred. When questioned about this, the child can give no explanation and seems unaware of its occurrence.

Based on the Tables and the case history, answer the following true/false questions:

a. It is possible that this child is experiencing absence seizures. _____ T F

b. It is normal for the child experiencing absence seizures to be unaware of their occurrence. _____ T F

c. The child with absence seizures usually has a difficult time reintegrating into the present activity. _____ T F

Question 3

Carol, a 13-year-old 9th grader, has been experiencing some seizures. Carol says that she has a peculiar taste in her mouth at the beginning of the seizure but has no memory of the seizure itself. During a seizure she stares, exhibits some lip-smacking movements, wanders around the room. Generally, an episode lasts less than a minute. She is on medications and seizure frequency

averages about two per month.

Based on the Tables and the case history, answer the following true/false questions:

a. Carol is experiencing a generalized tonic-clonic seizure. _____ T F
b. Carol is experiencing a complex partial seizure. _____ T F
c. The peculiar taste Carol is experiencing is an example of an aura. T F
d. The duration of Carol's seizure is longer than usual. _____ T F
e. One would expect that Carol would be mildly to moderately confused after the seizure. _____ T F

Question 4

Brian, a 26-year-old school teacher, sustained a very serious head injury in an auto accident two years ago. Brian has been diagnosed as having epilepsy secondary to the head injury. Brian's seizures are characterized by abrupt loss of consciousness, accompanied by falling; the body stiffens, followed by rhythmic movements of the extremities. Duration of the seizure averages less than two minutes. After the seizure Brian generally rests awhile; then he can usually get back to what he was doing prior to the seizure.

Based on the Tables and the case history, answer the following true/false questions:

a. Brian is experiencing a complex partial seizure. _____ T F
b. Brian is experiencing a generalized tonic-clonic seizure. _____ T F
c. It is reasonable to expect that Brian will be able to describe what happens during his seizures. _____ T F
d. Brian's seizure is of average duration. _____ T F

Answers

Question 1	Question 2	Question 3	Question 4
a. T	a. T	a. F	a. F
b. T	b. T	b. T	b. T
	c. F	c. T	c. F
		d. F	d. T
		e. T	

(Refer to pages 7-14 of the monograph for further clarification of answers.)

Use of the Anecdotal Record with the Film

In order to obtain practice in accurate observation and recording of seizures we recommend that you use the film "How to Recognize and Classify Seizures" as a practice film. Run each seizure on the film, stopping at the end of a seizure to record your observations of the seizure. Remember that you want to —

1. time the seizure;
2. observe what is happening before the seizure;
3. observe the sequence of behaviors during the seizure;
4. observe what happens after the seizure.

Following your observation and recording of the seizure discuss your observation with other observers. If there is a difference of opinion observe the seizure a second time to resolve your differences. Remember to observe carefully which side of the body (right, left, or both) was exhibiting signs of seizure activity.

This is a practice session, and obviously will not be the equivalent of observ-

ing a real seizure. For one thing, you will not be able to go back and observe a real seizure a second time on instant replay. With practice, however, you can develop the skill to accurately observe, record, and report seizure activity as an assistance to the treating physician and the patient.

You may also teach parents, family members, and others who associate with the person who has epilepsy to observe and record the seizures that occur in their presence. A concerted effort on the part of all to be accurate in their observation and reporting will assist the physician –

1. in making an accurate diagnosis
2. in determining appropriate treatment to obtain seizure control
3. in adjusting medications and/or treatment as needed.

Use of the Anecdotal Record

Some type of form may be helpful to you in observing and recording seizure behavior. The following is one example of such a form.

ANECDOTAL RECORD FOR THE PERSON WITH EPILEPSY

PERSON'S NAME _____ DATE _____

TIME _____

HOW LONG DID THE SEIZURE LAST? _____

WHAT WAS THE PERSON'S BEHAVIOR BEFORE THE SEIZURE (PRECIPITATING EVENTS, IF ANY)? _____

WHAT WAS THE PERSON'S BEHAVIOR DURING THE SEIZURE (SIDES AND PARTS OF THE BODY MOST AFFECTED DURING THE SEIZURE)? LIST IN CHRONOLOGICAL ORDER. UNDERLINE INITIAL EVENT. _____

WHAT WAS THE PERSON'S BEHAVIOR AFTER THE SEIZURE? _____

WHAT WAS THE SOCIAL REACTION OF THE PERSON'S PEERS, IF ANY, AFTER THE SEIZURE? _____

WERE THERE ANY INJURIES SUSTAINED AS A RESULT OF THE SEIZURE? _____

First Aid for Seizures

Appropriate first aid for seizures will depend upon the type of seizure(s) the individual has. The major component of first aid is to protect the person from injury. The following guidelines are offered for the most common seizure types.

Convulsive Seizures: Generalized Tonic-Clonic Seizures

In a generalized tonic-clonic seizure the person may suddenly fall to the ground and have a convulsive seizure as described in the preceding section. The most important point in first aid for these persons is to protect the individual. Cradle the head or place anything soft under the head, such as a towel or hand. Remove all sharp or dangerous objects. Convulsive seizures will run their course, and there is nothing that a bystander can do to prevent or terminate an attack. At the end of the attack, make sure the mouth is cleared of food and saliva by turning the person on his side. There may also be incontinence during a seizure. If the assisting person remains calm, the person will be reassured when alertness is resumed.

Breathing almost always resumes spontaneously after a convulsive seizure. Failure to resume breathing could signify some additional problem or complication of the seizure such as aspiration of food, associated heart attack, or severe head or neck injury. In this instance, standard measures for cardiopulmonary resuscitation should be undertaken. If repeated attacks occur, or if a seizure lasts longer than 10 minutes, the person should be taken to a medical facility immediately. This type of seizure incident may be or may lead to *status epilepticus* (non-stop seizures), which requires prompt treatment in a properly equipped medical facility. Emergency preparations after the 10-minute mark has passed will ensure that prompt attention will be available if the seizures do continue.

In summary, *first aid for generalized tonic-clonic seizures* or epileptic convulsions is the same as for any convulsive seizure.

- Prevent the person from hurting himself or herself. Place something soft under the head, loosen tight clothing, and clear the area of any sharp or hard objects.
- Do not force any objects into the person's mouth.
- Do not restrain the person's movements.
- Turn the person on his or her side to allow saliva to drain from the mouth.
- Stay with the person until the seizure ends naturally.
- Do not pour any liquids into the person's mouth or offer any food, drink, or medication until fully awake.
- Give artificial respiration if the person does not resume breathing after the seizure.
- Provide an area for the person to rest until fully awakened, accompanied by a responsible adult.
- Be reassuring and supportive when consciousness returns.
- While a convulsive seizure is not a medical emergency, occasionally a seizure may last longer than 10 minutes or a second seizure may occur. This requires prompt medical attention in a properly equipped medical facility.

Lengthy or recurrent attacks may indicate the presence of *status epilepticus* (non-stop seizures). Emergency preparations after the 10-minute mark has passed will ensure that prompt attention will be available if the seizures do continue.

Head Injury During a Seizure

If the individual has a seizure in which his head is seen to hit an object with force as he falls, or if there is a strong possibility that he may have done so, his post-seizure condition should be carefully monitored. Although sleepiness and confusion are natural consequences of a seizure, it should always be possible to rouse the person without undue difficulty. Failure to return to consciousness when roused during the post-seizure period is an indication for further medical assessment. If head injury as a consequence of a seizure is suspected, the person should be closely observed for the following signs.

- Difficulty in rousing at *20-minute* intervals, in response to an attempt to arouse
- Vomiting
- Complaints of difficulty with vision
- Excessive sleepiness approximately *two hours* after the seizure (unless, of course, the seizure has occurred late in the day and the person's usual bedtime is approaching)
- Complaints of difficulty with vision.

If any of the above signs are observed, and/or if there is persistent headache *after* a rest period, unconsciousness with failure to respond, unequal size of pupils (or excessively dilated), and/or weakness of the limbs, *immediate* medical attention should be sought.

Non-Convulsive Seizures: Absence and Complex-Partial Seizures

Absence attacks consist of momentary losses of contact with the surroundings and staring or "blanking out" spells. They last only a few seconds and the person, usually a child, quickly returns to full awareness without falling. These absence attacks occur so rapidly that the individual (and sometimes those around him or her) may be unaware of them. Sometimes they are accompanied by rapid blinking, chewing, or aimless movements of head or limbs. No first aid procedures are required for these seizures. However, because consciousness is affected and there is a lack of full awareness while the absence seizure is occurring, individuals subject to these attacks should be closely observed.

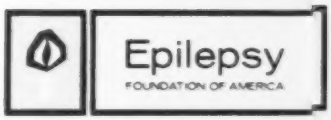
Complex partial seizures can be confused with many other problems. Such persons may have a blank stare, and their responses are limited or inappropriate. They may sit down, walk around aimlessly, smack their lips, pull at their clothing, pat or rub their arms. These attacks normally last two to three minutes. During this time, these patients may be thought to be drunk, drugged, or mentally ill. Although drowsy or fatigued and temporarily confused, they will return to their usual healthy state. First aid measures are again primarily directed at protection. Do not restrain them. Prevent them from getting hurt by guiding them away from danger gently and without force. Talk calmly and encourage them to sit or rest until fully alert.

First aid for non-convulsive/complex-partial seizures is primarily directed at protecting the person.

- Do not restrain the person.
- Remove harmful objects from the person's path.
- Calmly try to encourage the person to sit down or encourage him or her away from dangerous situations. If the person does not respond to these measures, force should not be used.
- Observe but do not approach the person who appears angry or combative.
- Remain with the person until he or she is fully alert.

SUMMARY

Excellent medical therapy is currently available to prevent seizures. The allied health professional has an important role in assisting the patient and the treating physician to obtain the best control of seizures possible for the individual. Information as to the description of the seizures, duration, recovery time, or circumstances when the attack occurred can be very helpful if reported properly. Those in the allied health professions not only assist by direct observation, they also can educate those in close association with the person with epilepsy to observe, record, and report vital information to the physician.



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